

# Santander U3

Astrobiology arises from the necessity to investigate the origin, presence and influences of life in the Universe. The search for life on Mars has a great importance in Astrobiology since it can provide an important advance in the central questions «What is Life?», «Is life a consequence of the evolution of the Universe?», «Are there general principles of the evolution of living matter?». The answers to these questions will not come from any particular discipline, but from the combined effort of many of them. The interaction of all those disciplines:

physics, geology, chemistry, biology, engineering, etc., that arises in order to give an answer to these questions, we call Astrobiology.

NASA has a budget for the Mars exploration financed until 2009. The European Space Agency (ESA) has started up the program AURORA. This year, NASA and ESA are going to launch three missions to Mars. Therefore, it is of fundamental importance to know the possibilities of proposing new experiments or to include new instruments in the exploration programs, how to design them, which are the scientific questions whose answers we are

looking for and how we must look for them.

We expect to attract young people: senior year students in the mentioned disciplines, as well as established scientists, who are interested in the exploration for life on Mars. The idea is to make the short course into an exciting workshop which, hopefully, will stimulate new research on this astrobiologically important topic in Europe and other parts of the world. The course will be relaxed enough to permit discussions on a wide range of topics, including instrument design and development, and to explore the possibility of new approaches.

Esta Escuela se impartirá en inglés sin interpretación al español  
Condiciones especiales de inscripción: licenciados, doctorandos y alumnos de último curso de las carreras de física, geología, química, biología, ingeniería y astronomía

**UIMP** Universidad  
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Menéndez Pelayo



\*Curso acreditado por el  
Ministerio de Educación, Cultura  
y Deporte para profesores de  
enseñanzas no universitarias

Transportista oficial  
**IBERIA**

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Plazo de solicitud de becas:  
Del 21 de abril al 23 de mayo de 2003

Apertura de matriculación:  
Desde el 21 de abril de 2003  
(plazas limitadas)

[www.uimp.es](http://www.uimp.es)

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 MINISTERIO  
DE EDUCACIÓN,  
CULTURA Y DEPORTE

# Santander 03



Del 7 al 11 de julio de 2003

**\*ESCUELA  
INTERNACIONAL DE  
ASTROBIOLOGÍA  
«JOSEP COMAS  
I SOLÀ»  
The search for  
life on Mars**

 CENTRO DE ASTROBIOLOGÍA  
ASOCIADO AL NASA ASTROBIOLOGY INSTITUTE



*Directores:*  
Juan Pérez Mercader  
Bruce Runnegar



## *Escuela Internacional de Astrobiología «Josep Comas i Solà» The search for life on Mars*

### Directores

#### **Juan Pérez Mercader**

Director del Centro de Astrobiología del CSIC-INTA

#### **Bruce Runnegar**

Director designado del NASA Astrobiology Institute

### Secretario

#### **Antonio Giaquinta**

Doctor en Ciencias Físicas

Centro de Astrobiología del CSIC-INTA

Del 7 al 11 de julio de 2003

### Lunes 7

10,30 h. Inauguration

The search for life on Mars: lessons from the early Earth

#### **Bruce Runnegar**

12,00 h. The Viking results and the search for organics on Mars

#### **Christopher McKay**

Ph.D. in AstroGeophysics

NASA Ames Research Center

16,30 h. The search for life on Mars with rovers, lessons learned from field experiments in Mars analog environments

#### **Carol Stoker**

Ph.D. in AstroGeophysics

NASA Ames Research Center

### Martes 8

10,00 h. Exploring Mars: engineering issues

#### **Paula J. Grunthaner**

Manager, Office of Advanced Instruments  
Jet Propulsion Laboratory, NASA

12,00 h. Microbiology of the Iron cycle

#### **Ricardo Amils Pibernat**

Catedrático de Biología Molecular  
Universidad Autónoma de Madrid

16,30 h. Life in extreme cold and dry conditions on Earth:  
analogs for Mars

#### **Christopher McKay**

### Miércoles 9

10,00 h. Terrestrial ecosystems as analogs for life on Mars:  
the Tinto River case

#### **Ricardo Amils Pibernat**

12,00 h. Searching for life in the Martian subsurface

#### **Carol Stoker**

16,30 h. Instrumentation for life detection

#### **Paula J. Grunthaner**

### Jueves 10

10,00 h. Detecting evidence for a second genesis of life on Mars

#### **Christopher McKay**

12,00 h. The Iron world, a scenario for archean life on two sister planets: Earth and Mars

#### **Ricardo Amils Pibernat**

16,30 h. Round table  
Life as consequence of Universe evolution

#### **Bruce Runnegar**

Christopher McKay

Carol Stoker

Paula J. Grunthaner

Ricardo Amils Pibernat

Moderador:

**Juan Pérez Mercader**

### Viernes 11

10,00 h. The search for life on Mars: past, present and future

#### **Carol Stoker**

12,00 h. Synthesis, assessment, farewell

**Juan Pérez Mercader**